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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/016,495	10/30/2001	Klaus Sauter	4172	4556

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EXAMINER

TRAN, THIEN F

ART UNIT

PAPER NUMBER

2811

DATE MAILED: 06/20/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/016,495

Applicant(s)

SAUTER ET AL.

Examiner

Thien Tran

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) 17 is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-12, 14-16, 18 and 19 is/are rejected.
- 7) ☒ Claim(s) 13 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 3.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: .

DETAILED ACTION

Election/Restrictions

Applicant's election of claims 1-16, 18 and 19 in Paper No. 5 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1-16 and 18-19 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. The disclosure fails to teach one of ordinary skill in the art how and what materials are used to form plastic spacer elements. Without this disclosure, one of ordinary skill cannot practice the invention without undue experimentation because of the number of operational parameters in the process.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

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A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-8, 10-12, 15, 16, 18 and 19 are rejected under 35 U.S.C. 102(b) as being anticipated by Dershem et al. (USPN 5,232,962).

Dershem et al. discloses the claimed microelectronic component 10 having a mounting surface; a substrate 12 having a facing surface; and an attachment layer (14, 16) that is interposed between and bonded to said mounting surface of said microelectronic component and said facing surface of said substrate so as to attach said microelectronic component onto said substrate; wherein said attachment layer comprises a layer 14 of an adhesive and plural generally ball-shaped spacer elements 16 dispersed in said adhesive; said spacer elements respectively have a nominal diameter that corresponds to a stand-off distance between said mounting surface of said microelectronic component and said facing surface of said substrate; and said spacer elements comprise a plastic material (col. 3, lines 57-60) that is slightly elastically flexible and resilient.

Regarding claim 2, said adhesive has a first coefficient of thermal expansion and said plastic material of said spacer elements has a second coefficient of thermal expansion. Dershem et al. has the same structure as claimed; it is inherent that the second coefficient of thermal expansion of the spacer elements approximately corresponds to the first coefficient of thermal expansion of said adhesive.

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Regarding claim 3, Dershem et al. discloses the structure as claimed. It is inherent that the second coefficient of thermal expansion is not less than one tenth of the first coefficient of thermal expansion of the adhesive.

Regarding claims 4 and 5, the spacer elements consist essentially of the plastic material. Therefore, it is inherent that the coefficient thermal expansion is in the range from $4 \times 10^{-5} \text{ K}^{-1}$ to $6 \times 10^{-5} \text{ K}^{-1}$.

Regarding claim 7, it is inherent that the plastic material 16 is elastically flexible and resilient to such an extent so that the spacer elements 16 exhibit an elastic flexible deformability of at least 1% of the nominal diameter in the attachment layer in the microelectronic package.

Regarding claim 8, said generally ball-shaped spacer elements 16 respectively have a spherical shape.

Regarding claim 10, said spacer elements 16 are made of plastic material, polyisobutyl methacrylate, which consists essentially of a single polymer.

Regarding claims 6 and 11, said spacer elements 16 are made of plastic material, polypropylene carbonate, which consists essentially of copolymer.

Regarding claim 12, said spacer elements do not contain any silica glass, do not contain any alumina, and do not contain any metal.

Regarding claim 15, said adhesive is a silicon adhesive.

Regarding claim 16, the claim limitation "formed from a single drop of said adhesive with said spacer elements dispersed therein, which drop has been applied on said facing surface of said substrate at a location centered relative to said mounting surface of said microelectronic component, and which drop then

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has been pressed between said facing surface and said mounting surface and thereafter cured to form said attachment layer" is taken to be a product by process limitation. A product by process claim directed to the product per se, no matter how actually made, In re Hirao, 190 USPQ 15 at 17 (footnote 3). See In re Fessman, 180 USPQ 324, 326 (CCPA 1974); In re Marosi et al., 218 USPQ 289, 292 (Fed. Cir. 1983); and particularly In re Thorpe, 227 USPQ 964, 966 (Fed. Cir. 1985), all of which make it clear that it is the patentability of the final structure of the product "gleaned" from the process steps, which must be determined in a "product by process" claim, and not the patentability of the process. See also MPEP 2113. Moreover, an old and obvious product produced by a new method is not a patentable product, whether claimed in "product by process" claims or not.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 9 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dershem et al. (USPN 5,232,962).

Dershem et al. does not disclose said nominal diameter being in the range from 150 um to 200 um. It would have been obvious to one having ordinary skill in the art at the time the invention was made to form the spacer elements having

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the nominal diameter in the claimed range, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. In re Aller, 105 USPQ 233. In re Daily, 93 USPQ 47 (CCPA 1966), the court held that changes in size and shape of parts of an invention in the absence of an unexpected result involves routine skill in the art. Additionally, In Gardner v. TEC Systems, Inc., 725 F.2d 1338, 220 USPQ 777 (Fed. Cir. 1984), cert. denied, 469 U.S. 830, 225 USPQ 232 (1984), the Federal Circuit held that where the only difference between the prior art and the claims was a recitation of relative dimensions of the claimed device and a device having the claimed relative dimensions would not perform differently than the prior art device, the claimed device was not patentably distinct from the prior art device.

Regarding claim 14, Dershem et al. does not disclose said microelectronic component comprising a sensor. It is old and well known in the art to have the microelectronic component comprising acceleration sensors. Therefore, forming the microelectronic component comprising a sensor would have been obvious modification to monitor acceleration for automotive vehicles.

Allowable Subject Matter

Claim 13 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: prior art reference does not teach or renders obvious a

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microelectronic package wherein the attachment layer further comprises an ant-static agent applied to the spacer elements or mixed in the adhesive.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thien Tran whose telephone number is (703) 308-4108. The examiner can normally be reached on 8:30AM - 5:00PM Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tom Thomas can be reached on (703) 308-2772. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9318 for regular communications and (703) 872-9319 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

tt
June 18, 2003



Thien Tran
Patent Examiner
Technology Center 2800